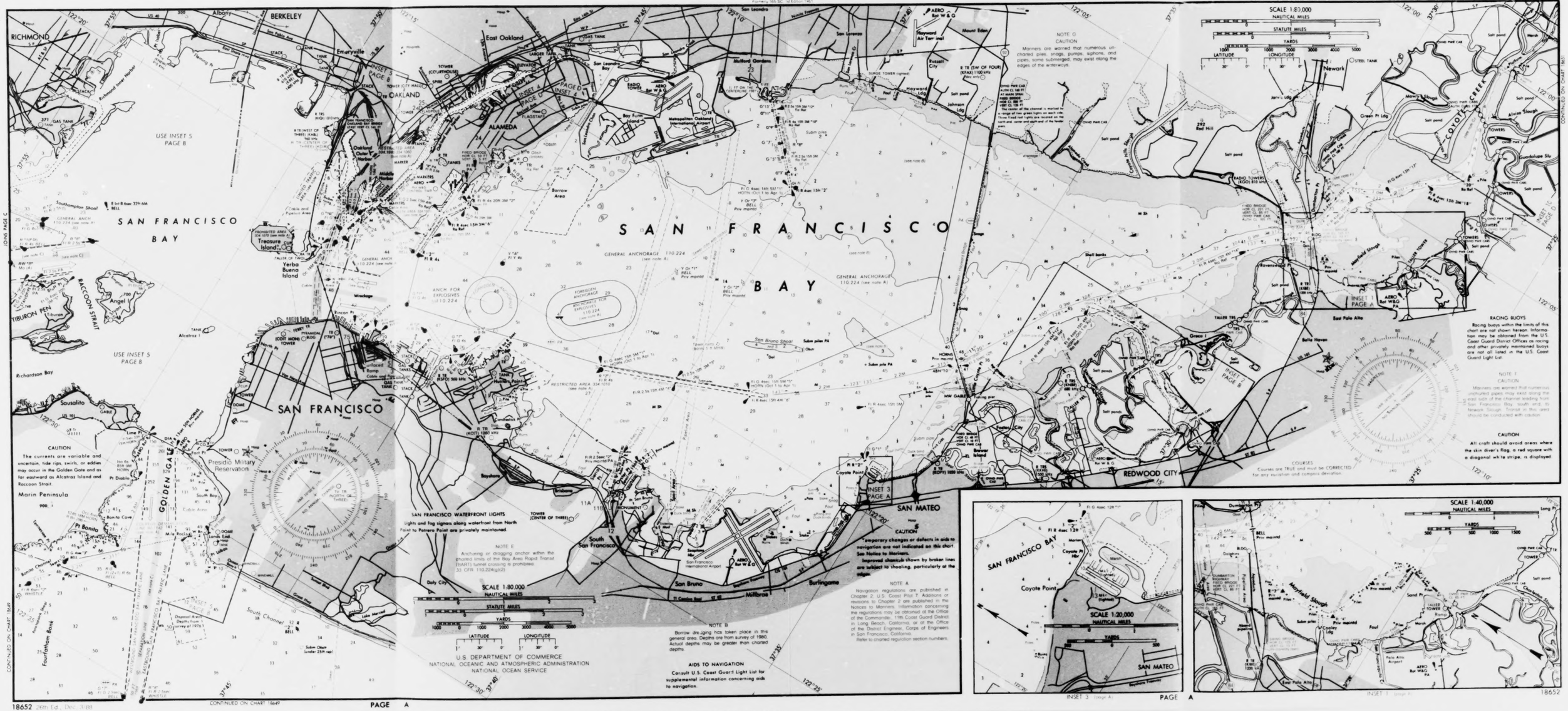

SAN FRANCISCO BAY
SAN FRANCISCO
OAKLAND
ALAMEDA
BERKELEY
RICHMOND
Albany
Emeryville
East Oakland
San Leandro
Hayward
Mount Eden
Russell City
Castro Cove
Newark
Jarvis Landing
Mowry Slough
Coyote Creek
Guadalupe Slu
Alviso Slough
Grant Pt Ldg
Green Pt Ldg
Red Hill
Dumbarton Bridge
Dumbarton Pt
Menhaden Point
Redwood Creek
East Palo Alto
Belle Haven
Greco I
Ravenswood Pt
Marshfield Slough
Bair Island
Flood Slough
Steinberger Slough
Inner Harbor
Middle Harbor
Oakland Outer Harbor
Yerba Buena Island
Treasure Island
Southampton Shoal
Angel I
TIBURON PEN
Tiburon
RACCOON STRAIT
Richardson Bay
Sausalito
Alcatraz I
Fort Pt
Presidio Military Reservation
Marin Peninsula
Pt Bonita
Bonita Cove
Bonita Channel
GOLDEN GATE
Fourfathom Bank
South Channel
Lime Pt
Pt Diablo
Pt Lobos
Subm Obstn (under 23 ft rep)
Disposal Area
Depths from survey of 1976
Anchorage
Wreckage
Obstn
Subm pipe
Subm piles
Subm pile PA
Subm Cable
Cable and Pipe Area
Dredged Area
Piling
Pipe
Tower
Dome
Spire
Stack
Tank
Gas Tank
Radio Tower
Radio Towers
Water Tower
Pier
Wharf
Marina
Ferry Slip
Ferry Terminal
Ferry Route
Prohibited Area
Restricted Area
Explosives Anchorage
Foreigners Anchorage
Bay Farm Island
Metropolitan Oakland International Airport
San Leandro Bay
San Leandro Creek
Oakland Inner Harbor
Harbor Entrance
Harbor Entrance Channel
Oakland Harbor Entrance Channel
Oakland Harbor Turning Basin
Oakland Harbor Anchorage
Oakland Harbor Channel
Oakland Harbor Reach
Oakland Harbor Jetty
Oakland Harbor Light
Oakland Harbor Entrance Light
Oakland Harbor Entrance Channel Light
Oakland Harbor Entrance Channel Range Front Light
Oakland Harbor Entrance Channel Range Rear

18652

NAUTICAL CHART 18652

SAN FRANCISCO BAY TO ANTIOCH

CALIFORNIA

MERCATOR PROJECTION AT SCALE 1:40,000 & 1:80,000
SOUNDINGS IN FEET AT MEAN LOWER LOW WATER
North American Datum of 1983
(World Geodetic System 1984)

Heights in feet above Mean High Water

AUTHORITIES

Hydrography and topography by the National Ocean Service, Charting and Geodetic Services with additional data from the Corps of Engineers, Geological Survey, U.S. Coast Guard, and Department of Navy.

HORIZONTAL DATUM

The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83) which for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 0.262" southward and 3.882" westward to agree with this chart.

SUPPLEMENTAL INFORMATION

Consult U.S. Coast Pilot 7 for important supplemental information.

ABBREVIATIONS

For complete list of Symbols and Abbreviations see Chart No. 1.

COLREGS: International Regulations for Preventing Collisions at Sea, 1972.
Demarcation lines are shown thus: ———

CAUTION

This chart has been corrected from the Notice to Mariners published weekly by the Defense Mapping Agency Hydrographic/Topographic Center and the Local Notice to Mariners issued periodically by each U.S. Coast Guard district to the date shown in the lower left hand corner.

COURSES

Bearings are given in International Nautical Miles. Courses are TRUE and must be CORRECTED for any variation and compass deviation.

WARNING

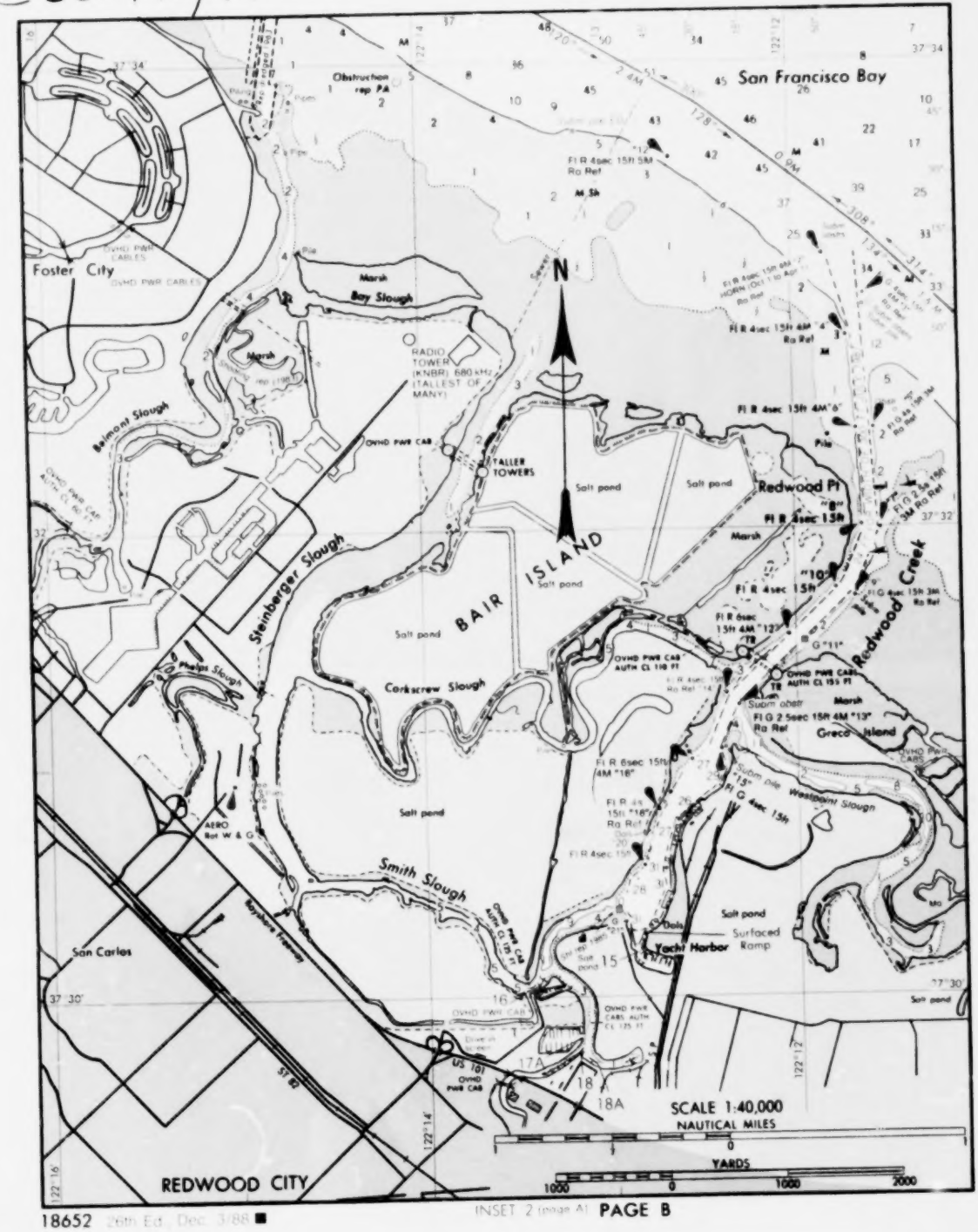
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

RADAR REFLECTORS

Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

Published at Washington, D.C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

C 55.418/7:



CONTINUED ON PAGE C

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California, or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.

Refer to charted regulation section numbers.

COURSES

Courses are TRUE and must be CORRECTED for any variation and compass deviation.

NOTE C

SAN FRANCISCO VESSEL TRAFFIC SERVICE

Traffic lanes are intended for use by vessels 300 gross tons and over; arrows indicate the approximate direction of traffic flow within each lane.

PRECAUTIONARY AREA

Vessels transiting the precautionary area east of Alcatraz Island should exercise special caution.

RECREATION AREAS

Recreation areas are intended primarily for use by recreation vessels. Such areas should not be utilized by vessels 300 gross tons or more for through passage or for any other purpose, except in case of emergency or special circumstances.

LIMITED TRAFFIC AREA

Passage by vessels 300 gross tons or more through the Limited Traffic Area south of Yerba Buena Island should be limited to one such vessel at a time to avoid crossing or meeting situations.

VESSEL TRAFFIC SERVICE

The San Francisco Vessel Traffic Service utilizes channel 13 and may be contacted on channels 13 or 16, call sign "San Francisco Vessel Traffic Service." See U.S. Coast Pilot for additional information; specific operating procedures are available from Commander, Eleventh Coast Guard District.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. Information may be obtained from the U.S. Coast Guard District Offices as racing and other privately maintained buoys are not all listed in the U.S. Coast Guard Light List.

CAUTION

The currents are variable and uncertain, tide rips, swirls, or eddies may occur in the Golden Gate and as far eastward as Alcatraz Island and Raccoon Strait.

RICHMOND HARBOR CHANNEL DEPTHS

Controlling depths for project widths in feet at M.L.L.W. 2-5-88

Entrance Channel 32.1
Turning Basin 31.2
Point Potrero Reach 31.0
Point Potrero Turn 32.5
Harbor Channel 23.9
Santa Fe Channel 30.3
Turning Basin 24.6

GOLDEN GATE BRIDGE
SUSPENSION BRIDGE
VERT CL 225 FT CENTER
VERT CL 213 FT N PIER
VERT CL 211 FT S PIER
The center of the span is marked by three white lights vertically in line above a fixed green light on each side.

WATERFRONT LIGHTS
Lights and fog signals along waterfront from North Point to Potrero Point are privately maintained.

NOTE E

Anchoring or dragging anchor within the charted limits of the Bay Area Rapid Transit (BART) tunnel crossing is prohibited. 33 CFR 110.224(g)(2)

SCALE 1:40,000
NAUTICAL MILES
YARDS
LATITUDE
LONGITUDE

PAGE B

INSET 5 (pages A and C)

CONTINUED ON PAGE A

PAGE B

18652

CONTINUED ON RIGHT PANEL AT TOP OF PAGE

CONTINUED ON LEFT PANEL AT BOTTOM OF PAGE

AIDS TO NAVIGATION

Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.

NOTE B

CAUTION

Mariners are warned that numerous uncharted piles, snags, pipes, shoals, obstructions, and wrecks, some submerged, may exist along the edges of the waterways.

NAPA RIVER

(see tabulation)

NAME OF CHANNEL	DEPTH MLLW (FEET)	WIDTH (FEET)	DATE OF SURVEY
HORSESHOE BEND TO BASIN AT JACKS BEND	4.1	MIDDLE 50 FT	5-88
TURNING BASIN	(A.)	(A.)	5-88
THENCE TO HEAD OF NAVIGATION (3RD ST.)	(A.)	(A.)	5-88

A. THE BOTTOM IS VERY IRREGULAR IN THE TURNING BASIN WITH MUCH OF THE BASIN RARE AT M.L.L.W. MARINERS SHOULD USE EXTREME CAUTION WHEN TRANSITING THE BASIN. WITH LOCAL KNOWLEDGE A DEPTH OF 3 FEET COULD BE OBTAINED THROUGH THE JACKS BEND AREA TO THE HEAD OF NAVIGATION AT 3RD ST.

NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGING CONDITIONS SUBSEQUENT TO THE ABOVE.

NAPA RIVER
CORPS OF ENGINEERS SURVEYS TO MAY 1988
CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)

PRODUCED BY COMPUTER ASSISTED METHODS

COURSES

Courses are TRUE and must be CORRECTED for any variation and compass deviation.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. Information may be obtained from the U.S. Coast Guard District Offices as racing and other privately maintained buoys are not all listed in the U.S. Coast Guard Light List.

SCALE 1:80,000
NAUTICAL MILES
STATUTE MILES
YARDS
LATITUDE
LONGITUDE

CAUTION

Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.

CAUTION

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

SCALE 1:80,000
NAUTICAL MILES
STATUTE MILES
YARDS
LATITUDE
LONGITUDE

CAUTION

Small craft should stay clear of large commercial and government vessels even if small craft have the right-of-way.

CAUTION

All craft should avoid areas where the skin diver's flag, a red square with a diagonal white stripe, is displayed.

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California, or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.

Refer to charted regulation section numbers.

PETALUMA RIVER EXTENSION

SCALE 1:80,000

JOINS PETALUMA RIVER EXTENSION

PINOLE SHOAL CHANNEL

Vessels drawing less than 20 feet are not permitted to enter or cross over Pinole Shoal dredged channel.

RICHMOND-SAN RAFAEL BRIDGE

There are 3 fixed white lights mounted vertically over fixed green lights at the center of the main navigation channel spans.

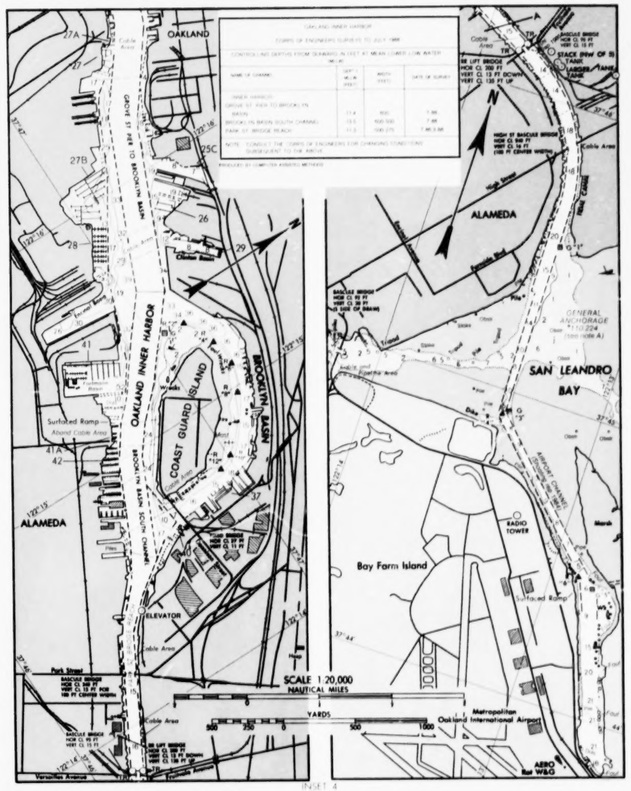
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

USE INSET 5 PAGE B

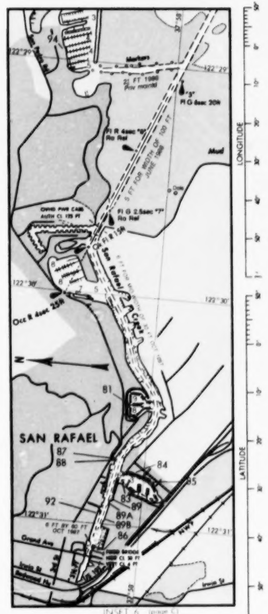
INSET 6 PAGE D

INSET 5 PAGE B

PAGE C



INSET 4
(page A)



INSET 6 (page C)

SCALE 1:20,000
NAUTICAL MILE
YARDS

CAUTION
CHANGES in BUOYAGE

Mariners are advised that enhanced aids to navigation are being changed to conform with Region 2 standards of the International Association of Lighthouse Authorities Maritime Buoyage System. Region B. Significant changes are: black port hand buoys to green, black and white vertically striped buoys to red and white horizontally striped buoys, and several lights from white to red or green as appropriate. Changes to aids to navigation will be announced in the Defense Mapping Agency Hydrographic/Topographic Center weekly Notice to Mariners and the U.S. Coast Guard Local Notice to Mariners.

STORM SIGNALS	DAY SIGNALS	NIGHT SIGNALS
SMALL CRAFT ADVISORY Winds from 18 to 33 knots. Check radio for latest marine weather forecast		
GALE WARNING Winds forecast from 34-47 knots		
STORM WARNING Winds forecast from 48-63 knots		
HURRICANE WARNING Winds forecast 64 knots and above		

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7, Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California, or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.
(Refer to charted regulation section numbers)

SAFETY HINTS

1. Keep your chart up to date by applying all Notices to Mariners corrections when you receive them.
2. Read carefully all notes printed on your chart, each is vital to your safety afloat.
3. Learn the meaning of each symbol and abbreviation on your chart from Chart No. 1.
4. The compass on your chart shows the variation from true north, however you must also correct your bearing for the deviation of your boat.
5. Constantly use your chart from the beginning to end of each trip. Keep in mind the orientation of your boat with respect to the chart.
6. Maintain your position on the chart by relating charted features with those you can identify in your surroundings.
7. Storm warning display locations and small craft warning signals have been charted for your safety.

RULES OF THE ROAD
(ABRIDGED)

Motorless craft have the right-of-way in almost all cases. Sailing vessels and motorboats less than sixty-five feet in length, shall not hamper, in a narrow channel, the safe passage of a vessel which can navigate only inside that channel.
A motorboat being overtaken has the right-of-way.
Motorboats approaching head to head or nearly so should pass port to port.
When motorboats approach each other at right angles or obliquely, the boat on the right has the right-of-way in most cases.
Motorboats must keep to the right in narrow channels, when safe and practicable.
Mariners are urged to become familiar with the complete text of the Rules of the Road in U.S. Coast Guard publication "Navigation Rules".

MARE ISLAND STRAIT
VALLEJO
MARE ISLAND
SAN PABLO BAY
NOTE B
The area within one hundred yards of the southern end of Mare Island and within 50 yards of any part of the berthing piers at the Navy Yard including pier 35 at the south end of Mare Island is a Prohibited Area 334.1100 (See Note A).

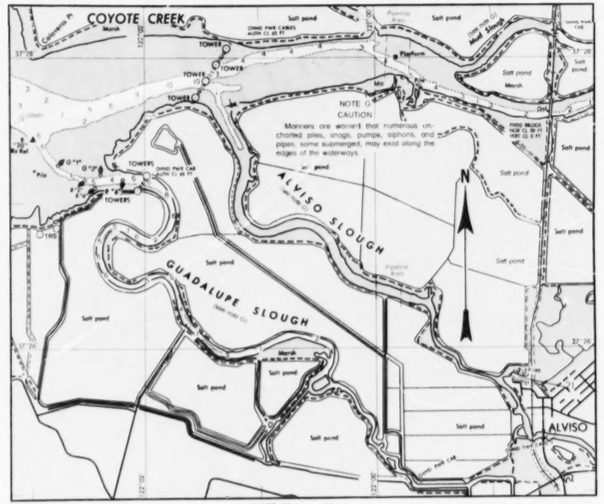
INSET 7 (page C)

SCALE 1:40,000
NAUTICAL MILES
STATUTE MILES
YARDS
LATITUDE
LONGITUDE

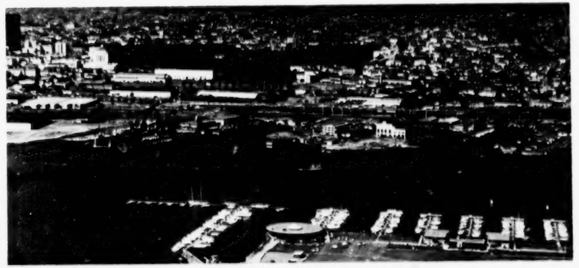
CAUTION
Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

FACILITIES
Locations of public marine facilities are shown by large magenta numbers and letters and refer to the facility tabulation.

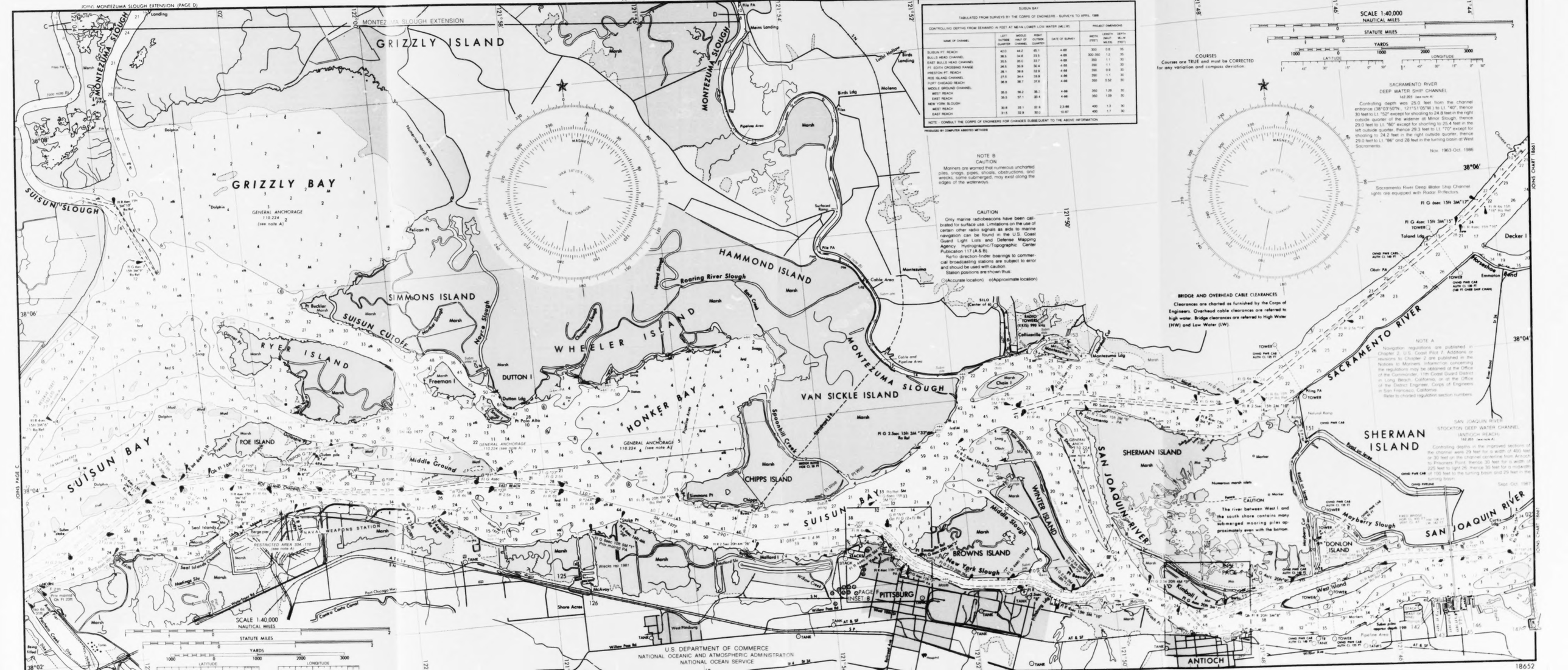

COYOTE CREEK
ALVISO SLOUGH
GUADALUPE SLOUGH
ALVISO
NOTE
CAUTION
Mariners are warned that numerous uncharted piles, snags, pumps, siphons, and pipes, some submerged, may exist along the edges of the waterways.

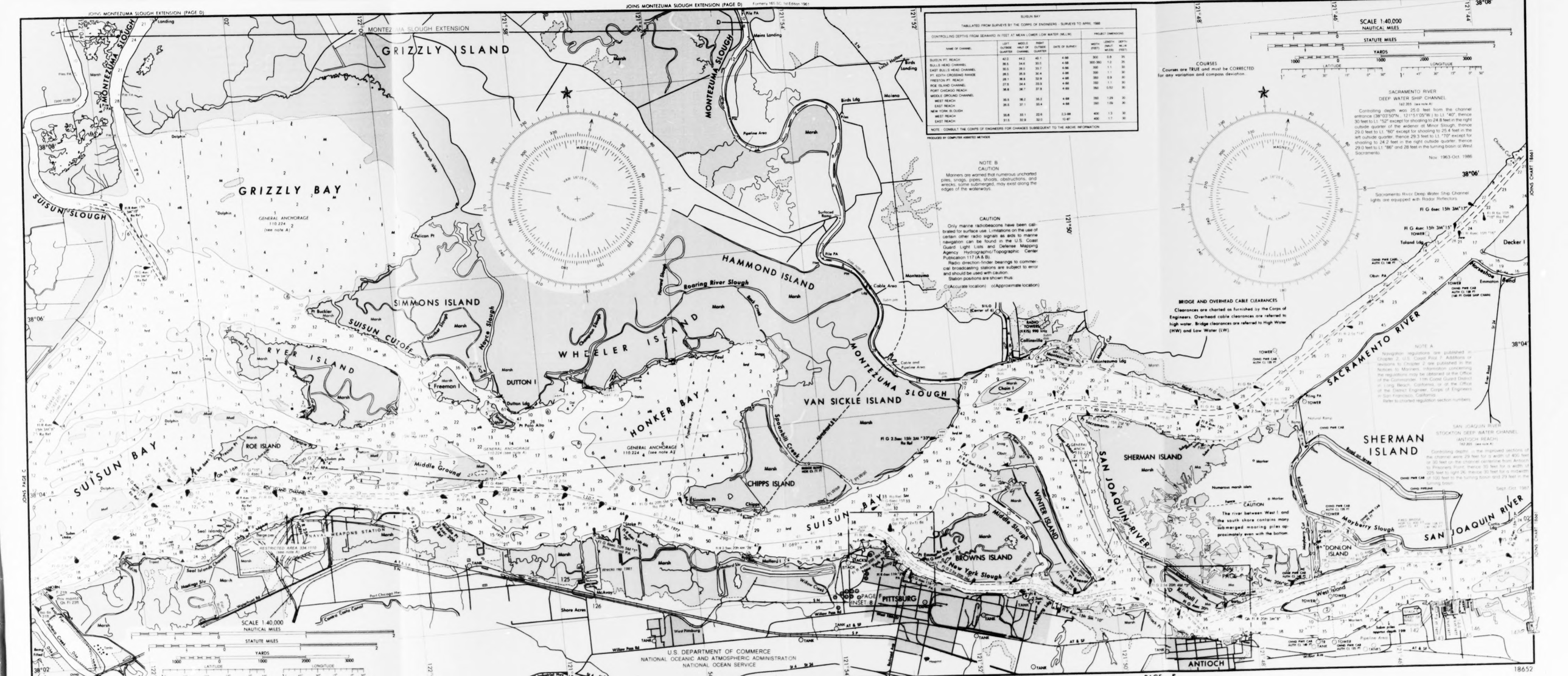
INSET 10 (page A)



OAKLAND INNER HARBOR

ALCATRAZ LIGHT


JOHNS MONTEZUMA SLOUGH EXTENSION (PAGE D)
MONTEZUMA SLOUGH EXTENSION
GRIZZLY ISLAND
GRIZZLY BAY
SUISUN SLOUGH
MONTEZUMA SLOUGH
HAMMOND ISLAND
SIMMONS ISLAND
SUISUN CUTOFF
RYER ISLAND
WHEELER ISLAND
DUTTON I
HONKER BAY
VAN SICKLE ISLAND
SUISUN BAY
ROE ISLAND
CHIPPS ISLAND
Middle Ground
NAVAL WEAPONS STATION
RESTRICTED AREA 10
BROWNS ISLAND
New York Slough
PITTSBURG
SHERMAN ISLAND
WINTER ISLAND
Middle Slough
SAN JOAQUIN RIVER
Mayberry Slough
DONLON ISLAND
West Island
ANTIOCH
SACRAMENTO RIVER
Decker I
Horseshoe Bend
Emmaton
Toland Ldg
Montezuma Ldg
Collinsville
Birds Ldg
Birds Landing
Mains Landing
Molena
Suisun Slough Ramp
Roaring River Slough
Nurse Slough
Hunter Slough
Boyce Slough
Ft Buckler
Freeman I
Pt Pedro Allo
Spoonbill Creek
Cordelia Slough
Pelican Pt
Dolphin
Seal Islands
Seal Island Channel
Hastings Slu
Suisun Cutoff Channel
Fast Beach
Lawler Pt
Chipps Island
Collinsville Pt
Laurel Pt
Roe Island Channel
Port Chicago Hwy
Concord Cable Canal
Shore Acres
West Pittsburg
McAvoy
Willow Creek
Willow Pass Rd
Mallard I
Mallard Slough
Suisun Bay Reserve Fleet
Ryer Island Ferry
Montezuma Slough Entrance
Pipeline Area
Cable Area
Cable and Pipeline Area
Marsh
Mudflat
Slough
Creek
Landing
Ldg
Pt
Is
Chain I
Decker I
Ring PA
Natural Ramp
Boat Launching Ramp
Boat Launching Facility
Boat Launching Facilities
Sacramento River Deep Water Ship Channel
Stockton Deep Water Channel
Antioch Reach
Pipeline Area
Cable Area
Cable and Pipeline Area
Anchorage Area
Fish Haven
Fish Haven Marker
Fish Haven Buoy
Fish Haven Light
Fish Haven Range
Fish Haven Range Front Light
Fish Haven Range Rear Light
Fish Haven Range Front Daybeacon
Fish Haven Range Rear Daybeacon
Fish Haven Range Front Lighted Buoy
Fish Haven Range Rear Lighted Buoy
Fish Haven Range Front Lighted Beacon
Fish Haven Range Rear Lighted Beacon
Fish Haven Range Front Lighted Daybeacon
Fish Haven Range Rear Lighted


JOINS MONTEZUMA SLOUGH EXTENSION (PAGE D)
Formerly 165-SC, 1st Edition 1961
MONTEZUMA SLOUGH EXTENSION
GRIZZLY ISLAND
GRIZZLY BAY
SUISUN SLOUGH
MONTEZUMA SLOUGH
HAMMOND ISLAND
SIMMONS ISLAND
SUISUN CUTOFF
RYER ISLAND
WHEELER ISLAND
DUTTON I
HONKER BAY
VAN SICKLE ISLAND
SUISUN BAY
ROE ISLAND
Middle Ground
CHIPPS ISLAND
SHERMAN ISLAND
WINTER ISLAND
SAN JOAQUIN RIVER
SACRAMENTO RIVER
BROWNS ISLAND
PITTSBURG
ANTIOCH
DONLON ISLAND
Roaring River Slough
Spoonbill Creek
Middle Slough
New York Slough
Mayberry Slough
West Island
Decker I
Horseshoe Bend
Montezuma Ldg
Birds Landing
Mallard Slough
Suisun Slough
Honker Slough
Freeman I
Chain I
Kimball I
Jersey I
Seal Islands
Hastings Slough
Peytonia Slough
Willow Pass Rd
Contra Costa Canal
Port Chicago Hwy
Shore Acres
McAvoy
West Pittsburg
Kirker Creek
Dutton Ldg
Pt Buckler
Pt Pulpo Alto
Simmons Pt
Spoke Pt
Falcon Pt
Roe Island Channel
Seal Islands Channel
Montezuma Slough Channel
Chipps Island Channel
Suisun Bay Channel
Middle Ground Channel
Grizzly Bay Channel
Sacramento River Deep Water Ship Channel
San Joaquin River Stockton Deep Water Channel (Antioch Reach)
GENERAL ANCHORAGE 110.224 (see note A)
RESTRICTED AREA 334.110
WEAPONS STATION
PAGE C
INSET B
SUISUN BAY
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - SURVEYS TO APRIL 1988
CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)
PROJECT DIMENSIONS
NAME OF CHANNEL
LEFT OUTSIDE QUARTER
MIDDLE HALF OF CHANNEL
RIGHT OUTSIDE QUARTER
DATE OF SURVEY
WIDTH (FEET)
LENGTH (NAUT. MILES)
DEPTH MLLW (FEET)
BUSUN PT. REACH
42.2
44.2
45.1
4-88
300
0.8
35
BULL'S HEAD CHANNEL
39.5
34.6
33.1
4-88
300-350
1.0
35
EAST BULL'S HEAD CHANNEL
35.5
38.0
33.7
4-88
350
1.1
30
PT. EDITH CROSSING RANGE
38.0
35.3
30.4
4-88
350
1.1
30
PRESTON PT. REACH
29.1
36.8
32.9
4-88
350
0.9
30
ROE ISLAND CHANNEL
27.8
34.4
33.2
4-88
350
1.1
30
PORT CHICAGO REACH
38.8
36.7
37.8
4-88
350
0.52
30
MIDDLE GROUND CHANNEL
WEST REACH
35.5
36.2
35.2
4-88
350
1.29
30
EAST REACH
36.5
37.1
33.4
4-88
350
1.09
30
NEW YORK SLOUGH
EAST REACH
30.8
33.1
33.6
2.3-88
400
1.3
30
WEST REACH
31.5
32.9
32.0
10-87
400
1.7
30
NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION
PRODUCED BY COMPUTER ASSISTED METHOD
NOTE B
CAUTION
Mariners are warned that numerous uncharted piles, snags, pipes, shoals, obstructions, and wrecks, some submerged, may exist along the edges of the waterways.
CAUTION
Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Hydrographic/Topographic Center Publication 117 (A & B).
Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.
Station positions are shown thus:
⊙(Accurate location) ○(Approximate location)
COURSES
Courses are TRUE and must be CORRECTED for any variation and compass deviation.
SACRAMENTO RIVER
DEEP WATER SHIP CHANNEL
162.205 (see note A)
Controlling depth was: 25.0 feet from the channel entrance (38°03'50"N., 121°51'05"W.) to Lt "40", thence 30 feet to Lt "52" except for shoaling to 24.8 feet in the right outside quarter of the entrance at Minor Slough, thence 29.0 feet to Lt "60" except for shoaling to 25.4 feet in the left outside quarter, thence 29.3 feet to Lt "70" except for shoaling to 24.2 feet in the right outside quarter, thence 29.0 feet to Lt "86" and 28 feet in the turning basin at West Sacramento.
Nov. 1963-Oct. 1986
Sacramento River Deep Water Ship Channel lights are equipped with Radar Reflectors.
BRIDGE AND OVERHEAD CABLE CLEARANCES
Clearances are charted as furnished by the Corps of Engineers. Overhead cable clearances are referred to high water. Bridge clearances are referred to High Water (HW) and Low Water (LW).
NOTE A
Navigation regulations are published in Chapter 2 of the Coast Pilot. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District at Long Beach, California, or at the Office of the District Engineer, Corps of Engineers, at San Francisco, California.
Refer to charted regulation section numbers.
CAUTION
The river between West I. and the south shore contains many submerged mooring piles up to approximately even with the bottom.
SCALE 1:40,000
NAUTICAL MILES
STATUTE MILES
YARDS
LATITUDE
LONGITUDE
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
JOINS CHART 18661
18652

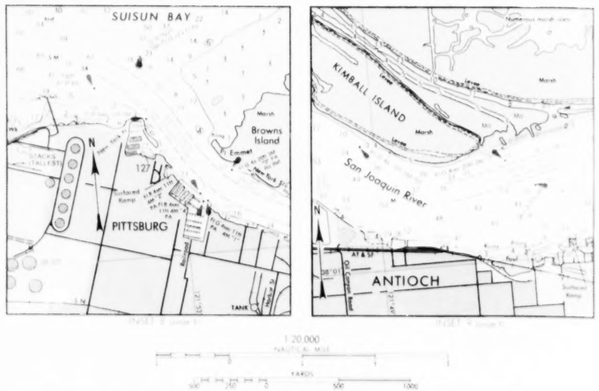
TIDAL CURRENT DATA

PLACE	POSITION		MAXIMUM CURRENTS				PLACE	POSITION		MAXIMUM CURRENTS			
			Flood		Ebb					Flood		Ebb	
	Lat.	Long.	Direction (true)	Average velocity	Direction (true)	Average velocity		Lat.	Long.	Direction (true)	Average velocity	Direction (true)	Average velocity
	N.	W.	deg.	knots	deg.	knots		N.	W.	deg.	knots	deg.	knots
GOLDEN GATE and APPROACHES							Angel Island, off Quarry Point	37 52	122 26				
Point Bonita, 0.5 mile west of	37 49	122 32	99	0.4	270	2.7	Angel Island, 0.4 mile west of	37 52	122 24	350	0.5	170	0.7
South Channel	37 49	122 32	25	1.2	180	1.4	Angel Island, Pt. Knox, 1 mile SW. of	37 50	122 25	90	0.3	270	0.3
North Channel, off Tennessee Cove	37 50	122 34	110	1.1	320	1.8	Richardson Bay entrance	37 51	122 28	91	0.3	271	0.3
							Raccoon Strait, off Point Stuart	37 52	122 27	90	0.3	270	0.3
North Channel, off Point Bonita	37 49	122 32	111	1.3	315	0.3	Raccoon Strait, off Hospital Cove	37 52	122 26	93	1.1	273	1.1
Pt. Bonita-Pt. Lobos, midway between	37 48	122 31	45	2.3	225	2.6							
Point Lobos, 0.5 mile off	37 49	122 30	90	1.6	265	3.0	Bluff Point, 0.1 mile west of	37 55	122 28	70	0.3	250	0.3
Mile Rock, 0.5 mile SW. (ebb/flood)	37 47	122 29	90	1.5	265	3.0	Brickyard Cove, 0.5 mile west of	37 54	122 24	90	0.3	270	0.3
Golden Gate Bridge, 0.8 mile west of	37 49	122 28	70	2.5	255	2.3	Point Richmond, 0.5 mile west of	37 54	122 25	54	0.3	234	0.3
							Point Richmond, 0.6 mile west of	37 54	122 24	90	0.3	270	0.3
SAN FRANCISCO BAY, South							Red Rock, east of	37 56	122 26	90	0.3	270	0.3
							Point San Quentin, 1.3 miles west of	37 59	122 29	90	0.3	270	0.3
Alcatraz Island, 0.8 mile west of	37 50	122 26	90	2.3	265	2.1							
Alcatraz Island, south of	37 49	122 25	95	1.5	285	1.9	**SAN PABLO BAY**						
Alcatraz Island, 0.6 mile south of	37 50	122 24	155	1.1	315	2.1							
Treasure Island, 0.6 mile west of	37 49	122 24	150	1.2	330	2.5	Point San Pedro, midchannel	37 58	122 29	90	0.3	270	0.3
Treasure Island, 0.6 mile south of	37 49	122 22	140	1.2	345	2.1	Pinole Point, 1.2 miles off	37 58	122 25	90	0.3	270	0.3
							Petaluma River approach	38 14	122 27	90	0.3	270	0.3
Yerba Buena Island, west of	37 49	122 23	170	1.4	315	2.5	Petaluma River entrance	38 14	122 26	90	0.3	270	0.3
San Francisco-Oakland Bay Bridge							Davis Point, midchannel	38 04	122 16	90	0.3	270	0.3
Treasure Island, 0.1 mile north of	37 50	122 22	90	1.2	308	1.5							
Treasure Island, 0.5 mile north of	37 50	122 23	140	1.4	320	1.5	**CARQUINEZ STRAIT**						
Yerba Buena Island, 0.5 mile south of	37 48	122 23	140	1.5	345	2.1							
							Mare Island Strait, between Mare	38 04	122 27	90	0.3	270	0.3
San Leon Outer Harbor entrance	37 48	122 21	170	1.6	335	1.7	Mare Island Strait, off South Vallejo	38 05	122 15	90	0.3	270	0.3
San Leon Outer Harbor midchannel	37 49	122 21	180	1.6	360	1.7	Crockett	38 03	122 13	90	0.3	270	0.3
San Leon Inner Harbor, channel	37 48	122 19	120	0.5	320	0.3	Benicia, south of	38 02	122 09	90	0.3	270	0.3
San Leon Inner Harbor, Shell Oil Dock	37 48	122 19	90	0.5	330	0.5							
San Leon Harbor, High Street Bridge	37 46	122 15	155	1.4	330	1.4	**SUISUN BAY**						
Mission Point, 0.5 mile west of	37 47	122 22	160	2.0	340	2.4							
Mission Rock, midchannel	37 47	122 23	180	2.1	360	2.1	Ryer Island, south of	38 14	121 55	90	0.3	270	0.3
Mission Rock, 0.6 mile west of	37 47	122 24	160	2.3	340	2.1	Grizzly Island, south of	38 09	121 59	90	0.3	270	0.3
Pier 50, 0.3 mile south of	37 46	122 23	160	2.1	340	2.1	Grizzly Slough entrance	38 07	121 58	90	0.3	270	0.3
Mission Rock, 0.3 mile west of	37 47	122 23	160	2.1	340	2.1	Montezuma Slough, west entrance	38 07	121 56	90	0.3	270	0.3
Mission Rock, 0.3 mile east of	37 47	122 22	160	2.1	340	2.1	Montezuma Slough, east entrance	38 06	121 54	90	0.3	270	0.3
							Between Ryer Island and Ryer Island	38 14	121 55	90	0.3	270	0.3
Hunters Point, midchannel	37 43	122 20	090	1.4	270	1.4							
Pier 70	37 45	122 23	090	1.4	270	1.4	Suisun Cutoff	38 14	122 02	90	0.3	270	0.3
Point Potrero, 0.3 mile east of	37 45	122 23	090	1.4	270	1.4	Suisun Slough, near bridge	38 14	122 03	90	0.3	270	0.3
Point Potrero, 1.2 miles east of	37 44	122 21	090	1.4	270	1.4	Montezuma Slough, E. end, near bridge	38 08	121 53	90	0.3	270	0.3
Islais Creek, 0.3 mile SW.	37 44	122 23	090	1.4	270	1.4	New York Slough	38 08	121 51	90	0.3	270	0.3
Pier 80, 0.3 mile SW.	37 45	122 23	090	1.4	270	1.4							
							SACRAMENTO RIVER						
Dutton Point, 0.6 mile west of	37 45	122 19	170	1.4	340	1.4							
Islais Creek, 0.5 mile west of	37 45	122 22	170	1.4	340	1.4	Collinsville, 0.7 mile SE. of Point	38 04	121 52	90	0.3	270	0.3
Pier 96, 0.3 mile west of	37 45	122 23	170	1.4	340	1.4	Point Sacramento, south of	38 03	121 51	90	0.3	270	0.3
Hunters Point	37 44	122 21	090	1.4	270	1.4							
Dumbarton Bridge	37 30	122 06	090	1.4	270	1.4	**SAN JOAQUIN RIVER**						
Dumbarton Bridge, 0.5 mile SW. of	37 29	122 06	090	1.4	270	1.4							
							Point Davies, 0.8 mile north of	38 07	121 51	90	0.3	270	0.3
SAN FRANCISCO BAY, North							Dutton Point, 0.6 mile west of	38 07	121 53	90	0.3	270	0.3
							Mallard Island, 0.6 mile west of	38 03	121 55	90	0.3	270	0.3
Point Diablo, 0.8 mile west of	37 49	122 29	90	2.1	270	2.1							
Point Diablo, 0.3 mile west of	37 48	122 28	90	2.1	270	2.1							
Alcatraz Island, 0.3 mile west of	37 50	122 27	90	2.1	270	2.1							
Alcatraz Island, 0.3 mile south of	37 49	122 25	90	2.1	270	2.1							
Alcatraz Island, 0.3 mile east of	37 50	122 25	90	2.1	270	2.1							
Pt. Blunt, Angel Is., 0.6 mile north of	37 52	122 25	90	2.1	270	2.1							

* Large current vectors which cross tides to show off-course are repeated over the foundation plans.

LATITUDE

LONGITUDE



SAN FRANCISCO (Golden Gate), CALIF., 1989-90

Predicted times and heights of high and low water. Pacific Standard Time. For Daylight Saving time, add 1 hour.
To predict local tide, apply the time difference listed in the facing tabulations to these tide predictions.

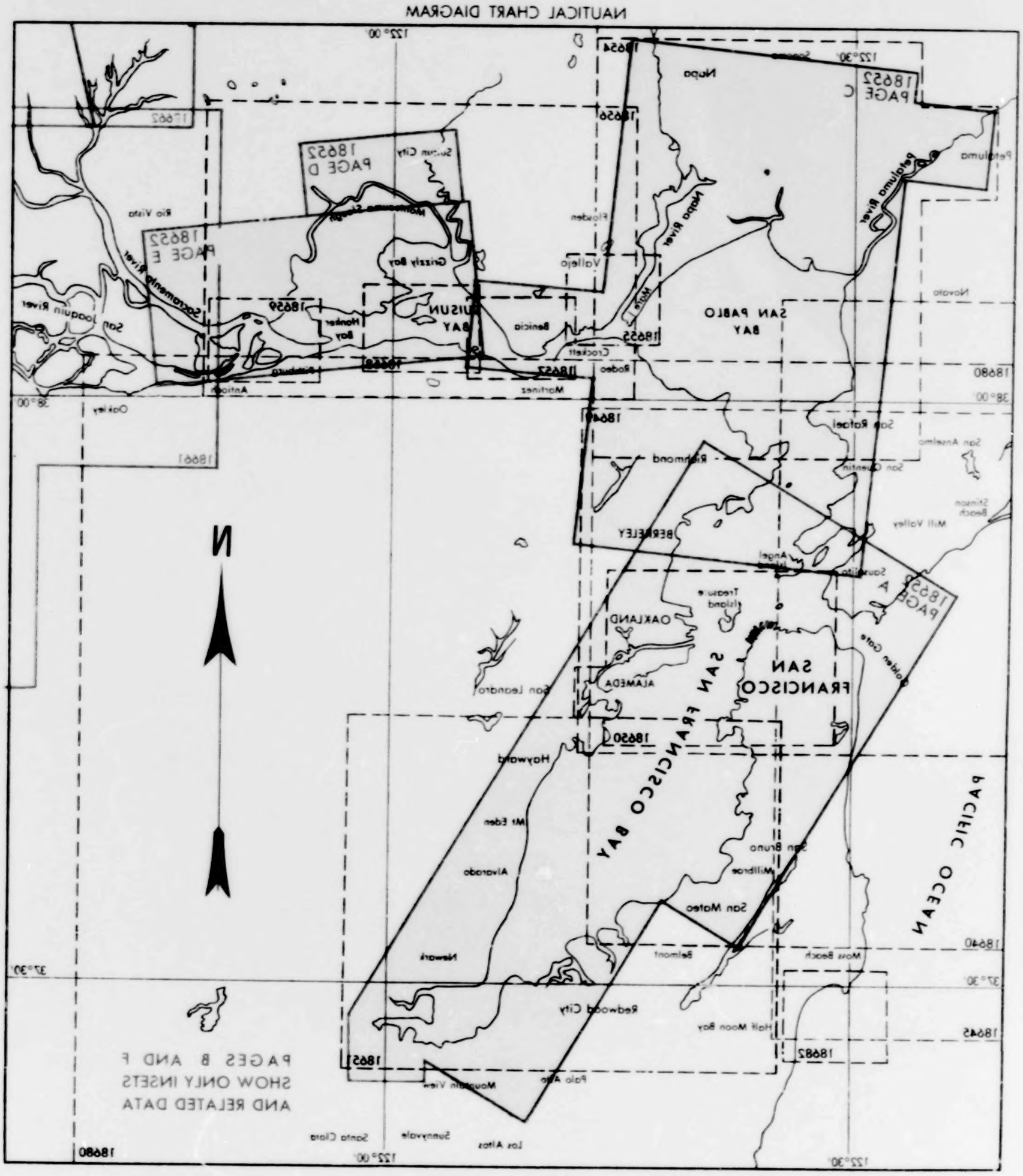
JANUARY 1989				FEBRUARY 1989				MARCH 1989				APRIL 1989			
Day	Time	Ht.		Day	Time	Ht.		Day	Time	Ht.		Day	Time	Ht.	
	h. m.	ft.			h. m.	ft.			h. m.	ft.			h. m.	ft.	
1 SU	0147	5.6		1 WE	0244	5.3		1 WE	0154	5.2		1 SA	0208	5.3	
	0755	5.8			0852	5.6			0802	5.6			0813	5.7	
	1335	0.2			1418	0.4			1416	0.4			1427	0.3	
	1936	5.8			2015	5.6			2028	5.6			2041	5.7	
2 MO	0221	5.5		2 TH	0317	5.2		2 TH	0232	5.1		2 SU	0243	5.2	
	0829	5.7			0925	5.5			0838	5.5			0847	5.6	
	1412	0.3			1452	0.5			1455	0.5			1504	0.4	
	2013	5.7			2049	5.5			2107	5.5			2116	5.6	
3 TU	0256	5.4		3 FR	0351	5.1		3 FR	0312	5.0		3 MO	0320	5.1	
	0905	5.6			0959	5.4			0916	5.4			0924	5.5	
	1452	0.4			1528	0.6			1537	0.6			1544	0.5	
	2053	5.6			2126	5.4			2150	5.4			2154	5.5	
4 WE	0334	5.3		4 SA	0428	5.0		4 SA	0357	4.9		4 TU	0402	5.0	
	0945	5.5			1037	5.3			1000	5.3			1006	5.4	
	1537	0.5			1609	0.7			1625	0.7			1630	0.6	
	2138	5.5			2208	5.3			2249	5.3			2238	5.4	
5 TH	0417	5.2		5 SU	0511	4.9		5 SU	0449	4.8		5 WE	0450	4.9	
	1031	5.4			1122	5.2			1051	5.2			1054	5.3	
	1627	0.6			1657	0.8			1722	0.8			1724	0.7	
	2228	5.4			2257	5.2			2351	5.2			2330	5.3	
6 FR	0506	5.1		6 MO	0601	4.8		6 MO	0550	4.7		6 TH	0548	4.8	
	1124	5.3			1216	5.1			1152	5.1			1152	5.2	
	1725	0.7			1753	0.9			1829	0.9			1827	0.8	
	2327	5.3			2355	5.1							2432	5.2	
7 SA	0604	5.0		7 TU	0701	4.7		7 TU	0701	4.6		7 FR	0656	4.7	
	1226	5.2			1320	5.0			1305	5.0			1300	5.1	
	1833	0.8			1859	1.0			1944	1.0			1939	0.9	
8 SU	0711	4.9		8 WE	0811	4.7		8 WE	0824	4.6		8 SA	0814	4.7	
	1337	5.1			1434	5.0			1427	5.0			1419	5.1	
	1950	0.8			2013	1.0			2102	1.0			2054	0.9	
9 MO	0827	4.9		9 TH	0929	4.8		9 TH	0954	4.7		9 SU	0939	4.8	
	1457	5.1			1554	5.1			1557	5.1			1545	5.2	
	2107	0.7			2126	0.9			2217	0.9			2205	0.8	
10 TU	0944	5.0		10 FR	1045	5.0		10 FR	1119	5.0		10 MO	1057	5.1	
	1613	5.2			1710	5.3			1720	5.3			1707	5.4	
	2222	0.6			2232	0.7			2321	0.7			2309	0.6	
11 WE	1058	5.2		11 SA	1154	5.3		11 SA	1232	5.4		11 TU	1205	5.4	
	1723	5.4			1817	5.5			1833	5.5			1812	5.6	
	2329	0.5			2330	0.5							2403	0.5	
12 TH	1159	5.4		12 SU	1252	5.5		12 SU	1331	5.6		12 WE	1302	5.6	
	1824	5.6			1914	5.7			1934	5.7			1907	5.8	
13 FR	1252	5.6		13 MO	1341	5.7		13 MO	1419	5.8		13 TH	1351	5.8	
	1917	5.8			2002	5.9			2027	5.9			1955	6.0	
14 SA	1339	5.8		14 TU	1423	5.9		14 TU	1459	6.0		14 FR	1433	6.0	
	2003	5.9			2044	6.0			2113	6.0			2037	6.1	
15 SU	1421	5.9		15 WE	1459	6.0		15 WE	1533	6.1		15 SA	1510	6.1	
	2044	6.0			2120	6.1			2154	6.1			2114	6.2	
16 MO	1459	6.0		16 TH	1531	6.1		16 TH	1604	6.2		16 SU	1545	6.2	
	2121	6.1			2153	6.2			2232	6.2			2148	6.3	
17 TU	1534	6.1		17 FR	1600	6.2		17 FR	1633	6.3		17 MO	1617	6.3	
	2155	6.2			2224	6.3			2308	6.3			2220	6.4	
18 WE	1606	6.2		18 SA	1627	6.3		18 SA	1701	6.4		18 TU	1647	6.4	
	2227	6.3			2254	6.4			2343	6.4			2251	6.5	
19 TH	1636	6.3		19 SU	1653	6.4		19 SU	1729	6.5		19 WE	1717	6.5	
	2258	6.4			2324	6.5							2322	6.6	
20 FR	1705	6.4		20 MO	1719	6.5		20 MO	1757	6.6		20 TH	1747	6.6	
	2329	6.5			2354	6.6							2353	6.7	
21 SA	1736	6.5		21 TU	1747	6.6		21 TU	1827	6.7		21 FR	1819	6.7	
	2359	6.6													
22 SU	1809	6.6		22 WE	1819	6.7		22 WE	1900	6.8		22 SA	1854	6.8	
23 MO	1844	6.7		23 TH	1854	6.8		23 TH	1936	6.9		23 SU	1933	6.9	
24 TU	1923	6.8		24 FR	1933	6.9		24 FR	2017	7.0		24 MO	2017	7.0	
25 WE	2008	6.9		25 SA	2018	7.0		25 SA	2103	7.1		25 TU	2107	7.1	
26 TH	2100	7.0		26 SU	2109	7.1		26 SU	2154	7.2		26 WE	2203	7.2	
27 FR	2159	7.1		27 MO	2207	7.2		27 MO	2252	7.3		27 TH	2305	7.3	
28 SA	2305	7.2		28 TU	2312	7.3		28 TU	2358	7.4		28 FR	2414	7.4	
29 SU	2419	7.3						29 WE	2511	7.5		29 SA	2529	7.5	
30 MO	2540	7.4						30 TH	2630	7.6		30 SU	2650	7.6	
31 TU	2700	7.5						31 FR	2750	7.7					

MAY 1989				JUNE 1989				JULY 1989				AUGUST 1989			
Day	Time	Ht.		Day	Time	Ht.		Day	Time	Ht.		Day	Time	Ht.	
	h. m.	ft.			h. m.	ft.			h. m.	ft.			h. m.	ft.	
1 MO	0247	5.4		1 TH	0337	5.5		1 SA	0403	5.6		1 TU	0441	5.6	
	0854	5.6			0941	5.7			1000	5.8			1035	5.8	
	1503	0.4			1545	0.3			1604	0.2			1643	0.2	
	2127	5.6			2208	5.7			2229	5.8			2309	5.8	
2 TU	0330	5.3		2 FR	0419	5.4		2 SU	0446	5.5		2 WE	0526	5.5	
	0935	5.5			1021	5.6			1042	5.7			1119	5.7	
	1545	0.5			1628	0.4			1649	0.3			1730	0.3	
	2208	5.5			2251	5.6			2315	5.7			2358	5.7	
3 WE	0417	5.2		3 SA	0504	5.3		3 MO	0533	5.4		3 TH	0617	5.4	
	1021	5.4			1107	5.5			1130	5.6			1209	5.6	
	1632	0.6			1715	0.5			1739	0.4			1823	0.4	
	2253	5.4			2339	5.5			2407	5.6					
4 TH	0509	5.1		4 SU	0554	5.2		4 TU	0626	5.3		4 FR	0715	5.3	
	1113	5.3			1159	5.4			1224	5.5			1305	5.5	
	1726	0.7			1809	0.6			1835	0.5			1923	0.5	
	2346	5.3							2506	5.5					
5 FR	0609	5.0		5 MO	0652	5.1		5 WE	0728	5.2		5 SA	0821	5.2	
	1214	5.2			1259	5.3			1327	5.4			1410	5.4	
	1829	0.8			1911	0.7			1941	0.6			2035	0.6	
6 SA	0717	4.9		6 TU	0759	5.0		6 TH	0840	5.1		6 SU	0937	5.1	
	1325	5.1			1408	5.2			1443	5.3			1527	5.3	
	1941	0.8			2023	0.8			2059	0.7			2157	0.7	
7 SU	0833	4.9		7 WE	0916	5.0		7 FR	0959	5.1		7 MO	1102	5.1	
	1446	5.1			1527	5.2			1604	5.3			1702	5.3	
	2102	0.8			2144	0.8			2224	0.7			2317	0.7	
8 MO	0956	5.0		8 TH	1040	5.1		8 SA	1126	5.2		8 TU	1232	5.2	
	1604	5.2			1652	5.3			1734	5.4			1827	5.4	
	2224	0.7			2305	0.7			2345	0.6					
9 TU	1110	5.2		9 FR	1201	5.3		9 SU	1251	5.4		9 WE	1343	5.4	
	1722	5.4			1813	5.5			1854	5.6			1937	5.6	
	2336	0.6													
10 WE	1217	5.4		10 SA	1312	5.5		10 MO	1358	5.6		10 TH	1442	5.6	
	1827	5.6			1923	5.7			1959	5.8			2035	5.8	
11 TH	1315	5.6		11 SU	1412	5.7		11 TU	1452	5.8		11 FR	1531	5.8	
	1923	5.8			2020	5.9			2054	6.0			2123	6.0	
12 FR	1406	5.8		12 MO	1504	5.9		12 WE	1539	6.0		12 SA	1611	6.0	
	2012	6.0			2107	6.1			2139	6.2			2202	6.2	
13 SA	1451	6.0		13 TU	1549	6.1		13 TH	1620	6.2		13 SU	1645	6.2	
	2057	6.2			2149	6.3			2220	6.4			2237	6.4	
14 SU	1532	6.2		14 WE	1628	6.3		14 FR	1657	6.4		14 MO	1716	6.4	
	2138	6.4			2227	6.5			2258	6.6			2309	6.6	
15 MO	1610	6.4		15 TH	1703	6.5		15 SA	1732	6.6		15 TU	1745	6.6	
	2216	6.6			2302	6.7			2334	6.8			2339	6.8	
16 TU	1646	6.6		16 FR	1736	6.7		16 SU	1805	6.8		16 WE	1813	6.8	
	2253	6.8			2335	6.9									
17 WE	1721	6.8		17 SA	1808	6.9		17 MO	1837	7.0		17 TH	1840	7.0	
	2329	6.9													
18 TH	1756	6.9		18 SU	1840	7.0		18 TU	1909	7.1		18 FR	1907	7.1	
19 FR	1831	7.0		19 MO	1913	7.1		19 WE	1941	7.2		19 SA	1935	7.2	
20 SA	1907	7.1		20 TU	1947	7.2		20 TH	2015	7.3		20 SU	2005	7.3	
21 SU	1945	7.2		21 WE	2024	7.3		21 FR	2053	7.4		21 MO	2040	7.4	
22 MO	2027	7.3		22 TH	2107	7.4		22 SA	2137	7.5		22 TU	2122	7.5	
23 TU	2114	7.4		23 FR	2157	7.5		23 SU	2229	7.6		23 WE	2214	7.6	
24 WE	2208	7.5		24 SA	2256	7.6		24 MO	2331	7.7		24 TH	2317	7.7	
25 TH	2312	7.6		25 SU	2405	7.7		25 TU				25 FR			
26 FR				26 MO	2523	7.8		26 WE	2545	7.8		26 SA	2533	7.8	
27 SA	2533	7.8		27 TU	2650	7.8		27 TH	2700	7.8		27 SU	2700	7.8	
28 SU	2700	7.8		28 WE	2750	7.8		28 FR	2750	7.8		28 MO	2750	7.8	
29 MO	2750	7.8		29 TH	2750	7.8		29 SA	2750	7.8		29 TU	2750	7.8	
30 TU	2750	7.8		30 FR	2750	7.8		30 SU	2750	7.8		30 WE	2750	7.8	
31 WE	2750	7.8						31 MO	2750	7.8		31 TH	2750	7.8	

SEPTEMBER 1989				OCTOBER 1989				NOVEMBER 1989				DECEMBER 1989			
Day	Time	Ht.		Day	Time	Ht.		Day	Time	Ht.		Day	Time	Ht.	
	h. m.	ft.			h. m.	ft.			h. m.	ft.			h. m.	ft.	
1 FR	0000	5.8		1 SU	0000	5.8		1 WE	0000	5.8		1 FR	0000	5.8	
	0533	5.5			0533	5.5			0533	5.5			0533	5.5	
	1139	5.5			1139	5.5			1139	5.5			1139	5.5	
	1745	5.5			1745	5.5			1745	5.5			1745	5.5	
2 SA	0000	5.8		2 MO	0000	5.8		2 TH	0000	5.8		2 SA	0000	5.8	
	0533	5.5			0533	5.5			0533	5.5			0533	5.5	
	1139	5.5			1139	5.5			1139	5.5			1139	5.5	
	1745	5.5			1745	5.5			1745	5.5			1745	5.5	
3 SU	0000	5.8		3 TU	0000	5.8		3 FR	0000	5.8		3 SU	0000	5.8	
	0533	5.5			0533	5.5			0533	5.5			0533	5.5	
	1139	5.5			1139	5.5			1139	5.5			1139	5.5	
	1745	5.5			1745	5.5			1745	5.5			1745	5.5	
4 MO	0000	5.8		4 WE	0000	5.8		4 SA	0000	5.8		4 MO	0000	5.8	
	0533	5.5			0533	5.5			0533	5.5			0533	5.5	
	1139	5.5			1139	5.5			1139	5.5			1139	5.5	
	1745	5.5			1745	5.5			1745	5.5			1745	5.5	
5 TU	0000	5.8		5 TH	0000	5.8		5 SU	0000	5.8		5 TU	0000	5.8	
	0533	5.5			0533	5.5			0533	5.5			0533	5.5	
	1139	5.5			1139	5.5			1139	5.5			1139	5.5	
	1745	5.5			1745	5.5			1745	5.5			1745	5.5	
6 WE	0000	5.8		6 FR	0000	5.8		6 MO	0000	5.8		6 WE	0000	5.8	
	0533	5.5			0533	5.5	

This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions, or comments for improving this chart to the Director, Charting and Geodetic Services (N/CGS22), National Ocean Service, NOAA, Rockville, Maryland 20852.

NAUTICAL CHART DIAGRAM



PUBLIC BOATING INSTRUCTION PROGRAMS

The United States Power Squadrons (USPS) and U.S. Coast Guard Auxiliary (USCGAUX), national organizations of boatmen, conduct extensive boating instruction programs in communities throughout the United States. For information regarding these educational courses, contact the following sources:

USPS - Local Squadron Commander or USPS Headquarters, Post Office Box 30429, Raleigh, N.C. 27612, 919-821-0281.

USCGAUX - 11th Coast Guard District, Union Bank Building, 400 Oceangate Blvd., Long Beach, CA 90822-5399, Tel. 213-499-5310 or USCG Headquarters (G-BAU), Washington, D.C. 20593-0001.